in the TSC2-/-LEF cells. FACS analyses showed that 1 mM glucose did not reduce cell size of the TSC2-/- LEF cells ~~(Fig. 17C)~~. Interestingly, 1 mM glucose significantly increased cell size of the TSC2-/- cells. The present invention is not limited to any particular mechanisms. Indeed, and understanding of the mechanism is not necessary to practice (make and use) the present invention. Nonetheless, it is contemplated that these data demonstrate that TSC2 plays an important role in cell size control in response to energy starvation. TSC2 and TSC2-3A expressing cells were also cultured in 1 mM glucose. Expression of wild type TSC2 restored the normal cellular energy response, a significant cell size reduction by energy starvation ~~(Fig. 17C)~~. In contrast, the TSC2-3A expressing cells did not restore normal cellular energy response and behaved indistinguishably from the TSC2-/- cells. Energy starvation caused a significant cell size increase of the TSC2-3A expressing cells ~~(Fig. 17C)~~. The present invention is not limited to any particular mechanisms. Indeed, and understanding of the mechanism is not necessary to practice (make and use) the present invention. Nonetheless, it is contemplated the data demonstrate that the AMPK dependent phosphorylation plays an important role for the physiological functions of TSC2 to regulate cell size in response to cellular energy starvation. One exemplary, and non-limiting, possible explanation for the cell size increase in the TSC2-/- cells is that the TSC2-/- cells are unable to respond to energy starvation and continue to grow despite of the low energy levels. However, energy limitation may prevent cell cycle progression by activating cell cycle checkpoints. Therefore, the TSC2-/- and the TSC2-3A expressing cells are increased in cell size under low glucose conditions but will die under glucose-free conditions. These observations are consistent with observations that TSC2 plays a role in the coordination between cell growth and cellular energy levels.

Please insert the attached Sequence Listing as new pages --70-74--.

IN THE CLAIMS

Please renumber the Claims pages from pages "70-72" to --75-77--.

IN THE ABSTRACT:

Please renumber the Abstract page from page "73" to --78--.

IN THE DRAWINGS:

Please replace the original Figure 13D with the replacement Figure 13D attached to this communication.